

Notice of Allowability

Application No.

10/518,885

Examiner

Ling-Siu Choi

Applicant(s)

BIGIAMI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/19/2006.
2. ☒ The allowed claim(s) is/are 25-48.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. The request filed on July 19, 2006 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 10/518885 is acceptable and the RCE has been established.
2. This Office action is in response to the amendment filed July 19, 2006. Claims 1-24 were canceled and claims 25-48 are now pending, wherein all claims are drawn to a liquid-phase process for polymerizing α -olefin(s) and claim 25 is an independent one.

Allowable Subject Matter

3. Claims 25-48 are allowed.
4. The following is an examiner's statement of reasons for allowance:
The present claims are allowable over the closest reference: Hwang et al. (US 4,634,744) and Takayuki et al. (US 4,551,509).

A liquid phase process for polymerizing α -olefin(s) comprising the steps of	
A	continuously polymerizing the α -olefin in liquid reaction medium in the presence of a catalyst system comprising at least one transition metal compound
B	continuously withdrawing a solution of liquid reaction medium soluble polymer
C	<u>after the solution of liquid reaction medium soluble polymer is withdrawn,</u> mixing in one or more mixing stages the solution of liquid reaction medium soluble polymer with an organic deactivator having <div style="margin-left: 40px;">(a) at least one hydroxy group and</div> <div style="margin-left: 40px;">(b) a boiling point higher than 150°C</div> wherein a ratio of the molecular weight (MW) of the organic deactivator to the hydroxy groups (n_{OH}) of the organic deactivator is between 20 and 100

(summary of claim 25)

Hwang et al. disclose a method for continuously (co)polymerizing ethylene with one or more 1-olefin in a reactor in the presence of a catalyst which comprises a transition metal derivative, wherein the polymer so formed is discharged from the reactor in a molten solution stream and wherein a deactivator comprising ethoxylated hydrocarbylamines of the formula of $R'_{3-n}N[(OCH_2CH_2)_mOH]_n$ is added to the molten polymer solution to deactivate the Ziegler-Natta catalyst (abstract; claim 1). Hwang et al. further disclose that "According to the invention, the selected catalyst deactivator is injected directly into the activity polymerizing molten polymrer solution stream at a point in the reactor prior to discharge of the stream from the reactor and prior to degassing of the polymer stream" (col. 3, lines 22-26). Thus, Hwang et al. do not teach or fairly suggest a liquid-phase process for polymerizing α -olefin, comprising after the solution of liquid reaction medium soluble polymer is withdrawn, mixing in one or

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more mixing stages the solution of liquid reaction medium soluble polymer with an **organic deactivator** having (a) at least one hydroxy group and (b) a boiling point higher than 150°C, wherein a ratio of the molecular weight (MW) of the organic deactivator to the hydroxy groups (n_{OH}) of the organic deactivator is between 20 and 100.

Takayuki et al. disclose a gas-phase process for producing ethylene polymer or ethylene copolymer, comprising the steps of (a) continuously polymerizing ethylene or ethylene and an α -olefin in a reaction mixture at a pressure of at least 300 kg/cm² and a temperature of at least 130°C in the presence of a catalyst composed of a compound of a transition metal of groups IVa and VIa of the Periodic Table and an organometallic compound of a metal of Groups I to III of the Periodic Table and (b) adding a polyalkylene glycol to the reaction mixture to deactivate the catalyst (claim 1). However, Takayuki et al. do not teach or fairly suggest a liquid-phase process for polymerizing α -olefin, comprising after the solution of liquid reaction medium soluble polymer is withdrawn, mixing in one or more mixing stages the solution of liquid reaction medium soluble polymer with an organic deactivator having (a) at least one hydroxy group and (b) a boiling point higher than 150°C, wherein a ratio of the molecular weight (MW) of the organic deactivator to the hydroxy groups (n_{OH}) of the organic deactivator is between 20 and 100.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

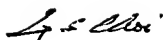
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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

August 18, 2006